

**ENVIRONMENTAL SERVICES  
SPB05-894P-S**

**1. PARTIES**

THIS CONTRACT, is entered into by and between the State of Montana, Department of Administration, State Procurement Bureau, (hereinafter referred to as "the State"), whose address and phone number are Room 165 Mitchell Building, 125 North Roberts, PO Box 200135, Helena MT 59620-0135, (406) 444-2575 and **Hydrometrics, Inc.**, (hereinafter referred to as the "Contractor"), whose nine digit Federal ID Number, address and phone number are 43-1955615, 3020 Bozeman Avenue, Helena MT 59601, and (406) 443-4150.

**THE PARTIES AGREE AS FOLLOWS:**

**2. PURPOSE**

The purpose of this term contract is to establish a list of Environmental Service Providers in several service areas. All qualified offerors will be assembled into a multiple contractor term contract for use by state agencies and other public procurement units. The State makes no guarantee of use by any agency-authorized access to this term contract. However, through data conveyed by the Montana Department of Environmental Quality, Montana Department of Natural Resources and Conservation, and Montana Fish, Wildlife and Parks, it is anticipated that this term contract should access approximately 2.5 million dollars or more annually.

**3. EFFECTIVE DATE, DURATION, AND RENEWAL**

**3.1 Contract Term.** This contract shall take effect upon execution of all signatures, and terminate on June 30, 2007, unless terminated earlier in accordance with the terms of this contract. (Mont. Code Ann. § 18-4-313.)

**3.2 Contract Renewal.** This contract may, upon mutual agreement between the parties and according to the terms of the existing contract, be renewed in one-year intervals, or any interval that is advantageous to the State, for a period not to exceed a total of six additional years. This renewal is dependent upon legislative appropriations.

**3.3 Addition of Analytical Laboratory Contractor**

Proposals will be accepted between April 1 and May 1 of each calendar year from current firms requesting review of their qualifications to perform Analytical Laboratory Services as originally requested under RFP SPB05-894P. The state will evaluate each proposal received in the exact manner in which the original proposals for other categories were evaluated. If proposal passes the requirements as evaluated to perform Analytical Lab Services, the state will update that firm's term contract to include the Analytical Lab Services category contingent on said firm being in good standing otherwise.

**4. NON-EXCLUSIVE CONTRACT**

The intent of this contract is to provide state agencies with an expedited means of procuring supplies and/or services. This contract is for the convenience of state agencies and is considered by the State Procurement Bureau to be a "Non-exclusive" use contract. Therefore, agencies may obtain this product/service from sources other than the contract holder(s) as long as they comply with Title 18, MCA, and their delegation agreement. The State Procurement Bureau does not guarantee any usage.

**5. COOPERATIVE PURCHASING**

Under Montana law, public procurement units, as defined in section 18-4-401, MCA, have the option of cooperatively purchasing with the State of Montana. Public procurement units are defined as local or state public procurement units of this or any other state, including an agency of the United States, or a tribal procurement unit. Unless the bidder/offeror objects, in writing, to the State Procurement Bureau prior to the

award of this contract, the prices, terms, and conditions of this contract will be offered to these public procurement units.

## **6. TERM CONTRACT REPORTING**

Term contract holder(s) shall furnish annual reports of term contract usage. Each report shall contain complete information on all public procurement units utilizing this term contract. Minimum information required to be included in usage reports: name of the agency or governmental entity who contacted you regarding a potential project; project title; agency contact person; if the project was not successfully negotiated, state the reason; number and title of contracts received; total dollar amounts for contracts received; the names of your company personnel involved in the project; and project status as of usage report date. The report for this term contract will be due on July 20<sup>th</sup> of each year.

Reported volumes and dollar totals may be checked by the State Procurement Bureau against State records for verification. Failure to provide timely or accurate reports is justification for cancellation of the contract and/or justification for removal from consideration for award of contracts by the State.

## **7. COST/PRICE ADJUSTMENTS**

**7.1 Cost Increase by Mutual Agreement.** After the initial term of the contract, each renewal term may be subject to a cost increase by mutual agreement. Contractor must provide written, verifiable justification for any cost adjustments they request during each renewal period. Contractor shall provide its cost adjustments in both written and electronic format.

All requests for cost/price adjustment must be submitted between April 1<sup>st</sup> and April 30<sup>th</sup> along with written justification. Requests received after April 30<sup>th</sup> will not be considered unless written approval from the SPB Contracts Officer is given to submit at a later date. In no event will cost/price adjustments be allowed beyond May 15<sup>th</sup>. All requests that are approved will be incorporated by contract amendment and made effective July 1<sup>st</sup> of the next approved renewal period.

**7.2 Differing Site Conditions.** If, during the term of this contract, circumstances or conditions are materially different than set out in the specifications, the Contractor may be entitled to an equitable adjustment in the contract price. The Contractor shall immediately cease work and notify, in writing, the State of any such conditions necessitating an adjustment as soon as they are suspected and prior to the changed conditions affecting the performance of this contract. Any adjustment shall be agreed upon in writing by both parties to the contract.

## **8. SERVICES AND/OR SUPPLIES**

**8.1 Service Categories.** Contractor agrees to provide to the State the following services:

**Water Quality Monitoring – Fixed Station and Probabilistic Design.** The statewide monitoring network has three components. The first component is the fixed station water quality-monitoring network. There are 38 fixed station sites located on streams throughout Montana where there are active USGS gauging stations. The USGS is currently contracted to collect all of the water chemistry samples. The State may also collect sediment samples for trace metal analyses. Remote sensing may be used to assess stream geomorphology, flood plain and watershed characteristics.

**Water Quality Monitoring - Lakes and Streams.** As part of the monitoring program, standards criteria and TMDL development, lakes will continue to be sampled collecting chemistry, physical, and habitat parameters. Stream sampling may include sediment and water chemistry, geomorphology, habitat, or sources of pollutants (e.g., pebble counts, channel cross-section, stream reach assessments, photo points, Rosgen Type II, etc GIS and remote sensing may be used to assess riparian habitats, and watershed physical characteristics.

**Water Quality Monitoring - Reference Sites.** As part of the monitoring program and standards criteria development, reference sites will continue to be identified and characterized as described above.

**TMDL Targets.** The TMDL program (within DEQ) will often need additional data in order to develop TMDL targets. Targets are quantitative water quality goals or “endpoints” that represent all the applicable narrative or numeric water quality standards. These targets, when achieved will represent full beneficial use support. This may require additional monitoring to determine reference condition when TMDL targets are based on narrative criteria or designated uses (water quality standards). Targets may be based on numeric water quality criteria, pollutant concentrations or loads, habitat or geomorphic measures, and/or biological criteria or populations. Targets are also used to determine the existing Water Quality Impairment Status (WQIS) of the streams on the 303(d) list. In most cases, the contractor will be required to write a report, which includes a recommendation and justification for one or more TMDL targets and also compare those targets to the existing conditions to determine WQIS. Communication with the State is crucial while deriving preliminary targets to ensure TMDL consistency across Montana.

**TMDL Source Assessment/Delineation.** The TMDL program (within DEQ) will often need additional data in order to link water quality impairments to their sources, or to allocate sources of pollutants. This may require data compilation, investigative monitoring and statistical analysis within a specified watershed, which can be used for source allocation, or the linkage of water quality impairments to causes and sources of impairment (e.g., sediment or land use practices). Quantitative source assessments may be conducted using field-based monitoring and/or interpretation and analysis of aerial photos, digital images, or GIS coverages depending upon impairment sources and available information. In most cases, contractors will be required to write a report that identifies what the major causes of impairment are and where the major sources of pollutants are located. DEQ will also need to have all pollution/pollutant sources quantified. The quantification of these loads will assist in both source load allocations and the total maximum daily loads. In addition, data collected during source assessments must be entered into an approved database structure or format and linkage to the National Hydrography Dataset (NHD) streams layer may be requested. The department may also request a cost/benefit analysis for implementing BMPs, which can be used for developing TMDL source allocations. Communication with the State is crucial while deriving assessing sources of pollutants to ensure TMDL consistency across Montana.

**TMDL Load Allocations.** The TMDL program (within DEQ) will often need additional data in order to develop load allocations in conjunction with the source assessment/delineation. Load allocations are the portion of receiving water’s loading capacity that is attributed to existing or future point or non-point sources of pollution or to natural background sources. Load allocations are best estimates of the loading, which can range from reasonably accurate estimates to gross allotments. Allocation can be expressed as a percent reduction that results in a maximum allowable load or as performance-based, which demonstrates how BMPs will be applied and how they will reduce the current loads. Communication with the State is crucial while deriving preliminary load allocations to ensure TMDL consistency across Montana.

**Total Maximum Daily Loads.** The TMDL program (within DEQ) will often need additional data in order to develop Total Maximum Daily Loads (TMDLs). A TMDL is defined as the sum of the wasteload allocations to point sources, load allocations to non-point sources and natural background sources with a margin of safety considering seasonal variation. TMDLS can be expresses in terms of mass per time, toxicity, or other appropriate measures that relate to the State’s Water Quality Standards. Communication with the State is crucial while deriving preliminary TMDLs to ensure consistency across Montana.

**Stakeholder Participation.** The TMDL program (within DEQ) will often need additional assistance in order to develop implementation/restoration strategies and monitoring plans. These plans often require public involvement with the local stakeholders. These efforts typically results in developing the measures needed to achieve full beneficial use support or to monitoring the uncertainties that arise during the TMDL process. Offerors should be experienced in or have staff members with proper credentials to facilitate participation with local stakeholders.

**TMDL Effectiveness Monitoring.** Effectiveness monitoring will be required to evaluate the success of implementing a TMDL plan. Monitoring will often include the collection of some combination of chemical,

physical or biological data, which can be used to determine if water quality is improving over time. Most monitoring designs and techniques will be fairly straightforward and may only require visiting a site once per year. In most cases, the contractor will be required to write an annual report, which can be used to determine if water quality is improving.

**Geographic Information Systems (GIS) Services.** The State, and in particular DEQ, will need assessments that characterize a watershed and identify and quantify all probable sources of pollutants. GIS maps will be required for every waterbody that is assessed. Thematic maps may include, but are not limited to: land ownership, land use, topography, hydrology, soils, precipitation, and/or endangered species distribution. In addition, DEQ may request that GIS applications be used to facilitate the interpretation and analysis of digital images and/or other georeferenced data.

**Remote Sensing.** The State may consider the use of remote sensing for characterizing a watershed and identifying probable sources of pollutants. For example, indicator metrics may be calculated from an air photo. Metrics may include active channel width, Rosgen level 1 Channel types, % shade, % land use, % land cover, average flood plain width, riparian corridor fragmentation, road density, road crossings, length of irrigation ditch/area, etc. DEQ may request contractors to assist them in developing remote sensing assessment techniques or to employ developed techniques in conducting detailed assessments. All data must be entered into an approved database structure, format, or program and linkage to the National Hydrography Dataset (NHD) streams layer may be requested. If necessary, the Contractor can subcontract in order to acquire the aerial photography products. All subcontractors for this task must be approved by the State prior to initiating a contract.

**Water Quality Modeling.** The State, and in particular DEQ, uses contracted services in the development and/or application of watershed and water quality modeling tools and techniques in the development of TMDLs. Models may be used to assist in defining TMDL loading allocations, performing existing/potential conditions analysis, watershed scenario analysis, and/or standards attainment analysis. The types of models that may be employed include dynamic watershed loading models (i.e. SWAT, HSPF), water quality fate and transport models (i.e. QUAL2E, QUAL2K), stream temperature and/or shade models (i.e. SSTemp, HeatSource, Shadow), and multi-dimensional lake/reservoir models (i.e. CE QUAL W2). In addition, simpler modeling tools and techniques such as GIS-based Risk Assessment Modeling may be employed or developed based on project needs and resources. The DEQ may also seek assistance in the identification and/or development of simple modeling tools that may be implemented at the desktop that facilitate quick scenario applications. These tools should be able to focus on specific water quality issues such as sediment, nutrients, salinity, etc. and be tailored to the various (eco) regions across the state.

**Statistical Analysis.** The State may request that large data sets be statistically analyzed for determining trends or for making comparisons. This service area may include data compilation, organization, manipulation and analysis. These analyses may be used to validate environmental targets by comparing reference data to existing data. They may also be used to establish a relationship or linkage between indicators and targets, the estimated loads and how targets link to beneficial use support. Analyses should be appropriate for the type of data being analyzed. In many cases, the contractor will be responsible for determining and providing rationale for appropriate statistical analyses to address pre-formulated environmental hypotheses. Analyses must consider spatial and temporal variations. Analyses may range from providing simple descriptive statistics to reporting multifactor predictive analyses.

**8.2 Reuse of Documents.** When the projects dictate a design or engineered approach, the State agrees that it will not apply the Contractor's designs to any other projects.

## **9. ENGINEERING ACCESS**

All of the firms selected may need to have access to engineering services depending on the nature of the project. The contractor(s) will be expected to use their own best judgment as to whether engineering services are needed for a given project. However, traditional engineering methodologies are not the emphasis of this contract. It is a violation of State Statute to practice engineering or land surveying without a license.

## **10. PROJECT SELECTION**

**10.1 Project Identification.** The State will be responsible for identifying projects, contacting landowners and securing necessary permission/cooperation agreements, selecting a contractor, writing grant applications and approving project payments.

**10.2 Hazardous Materials.** The State will not initiate projects where it is known that hazardous materials are present. If there is an indication of a potential of hazardous materials, then the State will do testing prior to contacting the contractor. However, there is always the possibility of unforeseen problems resulting in the stoppage of a project.

**10.3 Meetings.** The selected contractor may be required to meet with State personnel at the project site to conduct a site evaluation, discuss project issues and begin the negotiation process on project feasibility, conceptual design and costs for each project.

**10.4 Approach Expectations.** In the case of restoration activities, the agency will identify the preferred techniques. The determination made by the State may define which contractor(s) are contacted for project initiation. The State is always open to new and innovative approaches that accomplish project goals.

## **11. SELECTING A CONTRACTOR**

The State may select a term contract holder from the Environmental Services contract home page as provided under the state's website address

<http://www.discoveringmontana.com/doa/gsd/procurement/TermContracts/environservices/Default.asp>, taking into consideration such things as the contractor's area of expertise, requirements and location of the project, the contractor's availability and access to resources necessary to efficiently and effectively complete the project, demonstrated excellent past performance on State and public projects, identified subcontractors and total project cost.

General. Ordering agencies shall use the procedures in this section when ordering services priced at hourly rates as established by each Term Contract (TC). The applicable service categories are identified in each TC along with the contractor's price lists.

Request for Quotation (RFQ) procedures. The ordering agency must provide an RFQ, which includes the statement of work and limited, but specific evaluation criteria (e.g., experience and past performance), to TC contractors that offer services that will meet the agency's needs. The RFQ may be posted to the agency's state website to expedite responses.

Statement of Work (SOWs). All SOW's shall include at a minimum a detailed description of the work to be performed, location of work, period of performance, deliverable schedule, applicable performance standards and any special requirements (e.g., security clearances, travel, special knowledge).

- (1) Ordering agency may select a contractor from the appropriate service category and directly negotiate a mutually acceptable project based on a sudden and unexpected happening or unforeseen occurrence or condition, which requires immediate action. (Exigency).
- (2) Ordering agency may place orders at or below the \$5,000 threshold with any TC contractor that can meet the agency's needs. The ordering agency should attempt to distribute orders among all service category contractors.
- (3) For orders estimated to exceed \$5,000 but less than \$25,000.
  - (i) The ordering agency shall develop a statement of work.
  - (ii) The ordering agency shall provide the RFQ (including the statement of work and evaluation criteria) to at least three TC contractors that offer services that will meet the agency's needs.

(iii) The ordering agency shall request that contractors submit firm-fixed prices to perform the services identified in the statement of work.

(4) For orders estimated to exceed \$25,000. In addition to meeting the requirements of (3) above, the ordering agency shall:

(i) Provide the RFQ (including the statement of work and the evaluation criteria) to a minimum of six service category TC contractors (if category has less than 6, all contractors will be offered an RFQ) with a 50% replacement factor for each subsequent request for quote in the same service category.

Evaluation. The ordering agency shall evaluate all responses received using the evaluation criteria provided in the RFQ to each TC contractor. The ordering agency is responsible for considering the level of effort and the mix of labor proposed to perform a specific task being ordered, and for determining that the total price is reasonable. The agency will place the order with the contractor that represents the best value. After award, ordering agencies will provide timely notification to unsuccessful TC contractors. If an unsuccessful TC contractor requests information on a task order award that was based on factors other than price alone, a brief explanation of the basis for the award decision shall be provided.

Minimum documentation. The ordering agency shall document:

- (1) The TC contractors considered, noting the contractor from which the service was purchased.
- (2) A description of the service purchased.
- (3) The amount paid.
- (4) The evaluation methodology used in selecting the contractor to receive the order.
- (5) The rationale for making the selection.
- (6) Determination of price fair and reasonableness.

Agency project task orders will be utilized to finalize the project. Only written addenda will be used for adjustments of the task orders and must be signed by both parties. All task orders must contain signatures from both parties and appropriate agency legal review as directed in their procurement policy.

The State will monitor contractor selection by using the information provided in the annual TC usage reports.

Contractor's who fail to respond to three RFQ opportunities within a one-year period between July 1<sup>st</sup> and June 30<sup>th</sup> may be removed from the qualified list of contractors.

## **12. CONTRACTOR RESPONSIBILITIES**

**12.1 Supervision and Implementation.** The selected contractor for an individual project will be responsible for the supervision and implementation of the approach and will be responsible for oversight of work performed by all subcontractors. In most cases the contractor will provide and be responsible for all the necessary equipment, materials, supplies and personnel necessary for proper execution of the work. However, the State reserves the right to hire subcontractors (equipment and/or labor) if it will provide a cost savings to the State. The selected contractor will also be responsible for clean up of the sites if necessary and must have the sites inspected by the State immediately prior to completion.

**12.2 On-Site Requirements.** When a contractor is contacted by the State to discuss a project, the State and the contractor may visit the job site if deemed necessary by the Project Manager, to become familiar with conditions relating to the project and the labor requirements. The State will provide a detailed scope of work for the project and request the contractor supply the State with a response to project approach, cost, timeframe and any other information deemed necessary by the State to make a selection or complete a contract negotiation.

In the cases of Restoration or On-The-Ground Activities, the contractor shall adequately protect the work, adjacent property, and the public in all phases of the work. They shall be responsible for all damages or injury due to their action or neglect.

The contractor shall maintain access to all phases of the contract pending inspection by the State, the landowner, or their representative. All interim or final products funded by the contract will become the property of the State or Cooperative Purchaser upon payment for said products.

All work rejected as unsatisfactory shall be corrected prior to final inspection and acceptance. The contractor shall respond within seven calendar days after notice of observed defects has been given and shall proceed to immediately remedy these defects. Should the contractor fail to respond to the notice or not remedy the defects, the State may have the work corrected at the expense of the contractor.

**12.3 Clean Up (when project tasks require).** The contractor shall:

- Keep the premises free from debris and accumulation of waste;
- Clean up any oil or fuel spills;
- Keep machinery clean and free of weeds;
- Remove all construction equipment, tools and excess materials; and
- Perform finishing site preparation to limit the spread of noxious weeds before final payment by the State.

**12.4 Applicable Laws.** The contractor shall keep informed of, and shall comply with all applicable laws, ordinances, rules, regulations and orders of the City, County, State, Federal or public bodies having jurisdiction affecting any work to be done to provide the services required. The contractor shall provide all necessary safeguards for safety and protection, as set forth by the United States Department of Labor, Occupational Safety and Health Administration.

**12.5 Cooperation.** The contractor shall work closely with the States analytical consultants, (i.e. environmental laboratories and taxonomists) to develop the desired products.

**12.6 Work Acceptance.** The contractor is responsible for project oversight as needed. The State may also periodically provide personnel for administrative oversight from the initiation of the contract through project completion. All work will be inspected by the State or designated liaison prior to approval of any contract payments. All work rejected as unsatisfactory shall be corrected prior to final inspection and acceptance. Contractor shall respond within seven calendar days after notice of defects has been given by the State and proceed to immediately remedy all defects.

**12.7 Records.** The contractor will supply the State with documentation, when requested, of methods used throughout project implementation. Contractor will maintain records for themselves and all subcontractors of supplies, materials, equipment and labor hours expended.

**12.8 Communication.** Remoteness of project sites may necessitate that the contractor have some form of field communication such as a cellular phone. This communication is necessary to enable the State to respond to public concerns related to the project, accidents, inspections, or other project issues that require immediate feedback. In addition, the State or Cooperative Purchaser may require scheduled communication at agreed upon intervals. The communication schedule will be dependent upon the project circumstances and requirements of the contracting agency. In the case when a communication schedule is included in the Scope of Work, the schedule will commence when the contractor initiates the project.

**12.9 Collaboration.** The State encourages collaboration between contractors to increase the scope of services offered. In cases where the chosen contractor is not able to provide all services needed for the project, the State will expect the chosen contractor to contact other contractors on this list to negotiate subcontracts for these services before going elsewhere. Exceptions to this strategy will be evaluated on a case-by-case basis.

**12.10 Subcontractors, Project Budget and Invoicing.** All subcontractors to be used in any project must be approved by the authorized entity initiating the project. Project budgets will be negotiated for each individual project contract. However, all rates, terms and conditions set forth in this term contract will be applied to individual contracts. Subcontractor is defined as anyone other than the prime contractor having substantial direct involvement in a specific project.

The State reserves the right to choose the invoicing method from the following:

- Prime contractor's billing will include the subcontractors charges and payment will be made to the prime, or
- Prime and subcontractors will bill the State separately and the State will pay each directly.

### **13. CONSIDERATION/PAYMENT**

**13.1 Payment Schedule.** In consideration for the services to be provided, the State shall pay according to the negotiated agreement for each project. Hourly rates and miscellaneous charges as provided in Attachment B shall apply.

**13.2 Withholding of Payment.** The State may withhold payments to the Contractor if the Contractor has not performed in accordance with this contract. Such withholding cannot be greater than the additional costs to the State caused by the lack of performance.

### **14. CONTRACTOR REGISTRATION**

The Contractor will be registered with the Department of Labor and Industry under sections 39-9-201 and 39-9-204, MCA, *prior* to any construction activity under this contract. The State cannot execute a task order/contract for construction to a Contractor who is not registered. (Mont. Code Ann. § 39-9-401.)

### **15. CONTRACTOR WITHHOLDING**

Section 15-50-206, MCA, requires the state agency or department for whom a public works construction contract over \$5,000 is being performed, to withhold 1 percent of all payments and to transmit such monies to the Department of Revenue.

### **16. MONTANA PREVAILING WAGE REQUIREMENTS**

Unless superseded by federal law, Montana law requires that contractors and subcontractors give preference to the employment of Montana residents for any public works contract in excess of \$25,000 for construction or nonconstruction services in accordance with sections 18-2-401 through 18-2-432, MCA, and all administrative rules adopted pursuant thereto. Unless superseded by federal law, at least 50% of the workers of each contractor engaged in construction services must be performed by bona fide Montana residents. The Commissioner of the Montana Department of Labor and Industry has established the resident requirements in accordance with sections 18-2-403 and 18-2-409, MCA. Any and all questions concerning prevailing wage and Montana resident issues should be directed to the Montana Department of Labor and Industry.

In addition, unless superseded by federal law, all employees working on a public works contract shall be paid prevailing wage rates in accordance with sections 18-2-401 through 18-2-432, MCA, and all administrative rules adopted pursuant thereto. Montana law requires that all public works contracts, as defined in section 18-2-401, MCA, in which the total cost of the contract is in excess of \$25,000, contain a provision stating for each job classification the standard prevailing wage rate, including fringe benefits, travel, per diem, and zone pay that the contractors, subcontractors, and employers shall pay during the public works contract.

Furthermore, section 18-2-406, MCA, requires that all contractors, subcontractors, and employers who are performing work or providing services under a public works contract post in a prominent and accessible site on the project staging area or work area, no later than the first day of work and continuing for the entire duration of the contract, a legible statement of all wages and fringe benefits to be paid to the employees in compliance with section 18-2-423, MCA. Section 18-2-423, MCA, requires that employees receiving an hourly wage must be paid on a weekly basis.

Each contractor, subcontractor, and employer must maintain payroll records in a manner readily capable of being certified for submission under section 18-2-423, MCA, for not less than three years after the contractor's, subcontractor's, or employer's completion of work on the public works contract.



The nature of the work performed or services provided under this contract meets the statutory definition of a "public works contract" under section 18-2-401(11)(a), MCA, and falls under the category of Heavy Construction and Nonconstruction services.

The most current Montana Prevailing Wage Booklet will automatically be incorporated at time of renewal. It is the contractor's responsibility to ensure they are using the most current prevailing wages during performance of its covered work.

## **17. ACCESS AND RETENTION OF RECORDS**

**17.1 Access to Records.** The Contractor agrees to provide the State, Legislative Auditor or their authorized agent's access to any records necessary to determine contract compliance. (Mont. Code Ann. § 18-1-118.)

**17.2 Retention Period.** The Contractor agrees to create and retain records supporting the environmental services for a period of three years after either the completion date of this contract or the conclusion of any claim, litigation or exception relating to this contract taken by the State of Montana or a third party.

## **18. ASSIGNMENT, TRANSFER AND SUBCONTRACTING**

The Contractor shall not assign, transfer or subcontract any portion of this contract without the express written consent of the State. (Mont. Code Ann. § 18-4-141.) The Contractor shall be responsible to the State for the acts and omissions of all subcontractors or agents and of persons directly or indirectly employed by such subcontractors, and for the acts and omissions of persons employed directly by the Contractor. No contractual relationships exist between any subcontractor and the State.

## **19. HOLD HARMLESS/INDEMNIFICATION**

The Contractor agrees to protect, defend, and save the State, its elected and appointed officials, agents, and employees, while acting within the scope of their duties as such, harmless from and against all claims, demands, causes of action of any kind or character, including the cost of defense thereof, arising in favor of the Contractor's employees or third parties on account of bodily or personal injuries, death, or damage to property arising out of services performed or omissions of services or in any way resulting from the acts or omissions of the Contractor and/or its agents, employees, representatives, assigns, subcontractors, except the sole negligence of the State, under this agreement.

## **20. REQUIRED INSURANCE**

**20.1 General Requirements.** The Contractor shall maintain for the duration of the contract, at its cost and expense, insurance against claims for injuries to persons or damages to property, including contractual liability, which may arise from or in connection with the performance of the work by the Contractor, agents, employees, representatives, assigns, or subcontractors. This insurance shall cover such claims as may be caused by any negligent act or omission.

**20.2 Primary Insurance.** The Contractor's insurance coverage shall be primary insurance as respect to the State, its officers, officials, employees, and volunteers and shall apply separately to each project or location. Any insurance or self-insurance maintained by the State, its officers, officials, employees or volunteers shall be excess of the Contractor's insurance and shall not contribute with it.

**20.3 Specific Requirements for Commercial General Liability.** The Contractor shall purchase and maintain occurrence coverage with combined single limits for bodily injury, personal injury, and property damage of \$1,000,000 per occurrence and \$2,000,000 aggregate per year to cover such claims as may be caused by any act, omission, or negligence of the Contractor or its officers, agents, representatives, assigns or subcontractors.

**20.4 Additional Insured Status.** The State, its officers, officials, employees, and volunteers are to be covered and listed as additional insureds; for liability arising out of activities performed by or on behalf of the Contractor, including the insured's general supervision of the Contractor; products and completed operations; premises owned, leased, occupied, or used.

**20.5 Specific Requirements for Automobile Liability.** The Contractor shall purchase and maintain coverage with split limits of \$500,000 per person (personal injury), \$1,000,000 per accident occurrence (personal injury), and \$100,000 per accident occurrence (property damage), OR combined single limits of \$1,000,000 per occurrence to cover such claims as may be caused by any act, omission, or negligence of the contractor or its officers, agents, representatives, assigns or subcontractors.

**20.6 Additional Insured Status.** The State, its officers, officials, employees, and volunteers are to be covered and listed as additional insureds for automobiles leased, hired, or borrowed by the Contractor.

**20.7 Specific Requirements for Professional Liability.** The Contractor shall purchase and maintain occurrence coverage with combined single limits for each wrongful act of \$1,000,000 per occurrence and \$2,000,000 aggregate per year to cover such claims as may be caused by any act, omission, negligence of the Contractor or its officers, agents, representatives, assigns or subcontractors. Note: if "occurrence" coverage is unavailable or cost prohibitive, the Contractor may provide "claims made" coverage provided the following conditions are met: (1) the commencement date of the contract must not fall outside the effective date of insurance coverage and it will be the retroactive date for insurance coverage in future years; and (2) the claims made policy must have a three year tail for claims that are made (filed) after the cancellation or expiration date of the policy.

**20.8 Deductibles and Self-Insured Retentions.** Any deductible or self-insured retention must be declared to and approved by the state agency. At the request of the agency either: (1) the insurer shall reduce or eliminate such deductibles or self-insured retentions as respects the State, its officers, officials, employees, or volunteers; or (2) at the expense of the Contractor, the Contractor shall procure a bond guaranteeing payment of losses and related investigations, claims administration, and defense expenses.

**20.9 Certificate of Insurance/Endorsements.** A certificate of insurance from an insurer with a Best's rating of no less than A- indicating compliance with the required coverages has been received by the State Procurement Bureau, PO Box 200135, Helena MT 59620-0135. The Contractor must notify the State immediately, of any material change in insurance coverage, such as changes in limits, coverages, change in status of policy, etc. The State reserves the right to require complete copies of insurance policies at all times.

## **21. COMPLIANCE WITH THE WORKERS' COMPENSATION ACT**

Contractors are required to comply with the provisions of the Montana Workers' Compensation Act while performing work for the State of Montana in accordance with sections 39-71-120, 39-71-401, and 39-71-405, MCA. Proof of compliance must be in the form of workers' compensation insurance, an independent contractor's exemption, or documentation of corporate officer status. Neither the contractor nor its employees are employees of the State. This insurance/exemption must be valid for the entire term of the contract. A renewal document must be sent to the State Procurement Bureau, PO Box 200135, Helena MT 59620-0135, upon expiration.

## **22. COMPLIANCE WITH LAWS**

The Contractor must, in performance of work under this contract, fully comply with all applicable federal, state, or local laws, rules and regulations, including the Montana Human Rights Act, the Civil Rights Act of 1964, the Age Discrimination Act of 1975, the Americans with Disabilities Act of 1990, and Section 504 of the Rehabilitation Act of 1973. Any subletting or subcontracting by the Contractor subjects subcontractors to the same provision. In accordance with section 49-3-207, MCA, the Contractor agrees that the hiring of persons to perform the contract will be made on the basis of merit and qualifications and there will be no discrimination based upon race, color, religion, creed, political ideas, sex, age, marital status, physical or mental disability, or national origin by the persons performing the contract.

## **23. INTELLECTUAL PROPERTY**

All patent and other legal rights in or to inventions created in whole or in part under this contract must be available to the State for royalty-free and nonexclusive licensing. Both parties shall have a royalty-free, nonexclusive, and irrevocable right to reproduce, publish or otherwise use and authorize others to use, copyrightable property created under this contract.

## **24. PATENT AND COPYRIGHT PROTECTION**

**24.1 Third Party Claim.** In the event of any claim by any third party against the State that the products furnished under this contract infringe upon or violate any patent or copyright, the State shall promptly notify Contractor. Contractor shall defend such claim, in the State's name or its own name, as appropriate, but at Contractor's expense. Contractor will indemnify the State against all costs, damages and attorney's fees that accrue as a result of such claim. If the State reasonably concludes that its interests are not being properly protected, or if principles of governmental or public law are involved, it may enter any action.

**24.2 Product Subject of Claim.** If any product furnished is likely to or does become the subject of a claim of infringement of a patent or copyright, then Contractor may, at its option, procure for the State the right to continue using the alleged infringing product, or modify the product so that it becomes non-infringing. If none of the above options can be accomplished, or if the use of such product by the State shall be prevented by injunction, the State will determine if the Contract has been breached.

## **25. CONTRACT TERMINATION**

**25.1 Termination for Cause.** The State may, by written notice to the Contractor, terminate this contract in whole or in part at any time the Contractor fails to perform this contract.

**25.2 Reduction of Funding.** The State, at its sole discretion, may terminate or reduce the scope of this contract if available funding is reduced for any reason. (See Mont. Code Ann. § 18-4-313(3).)

## **26. STATE PERSONNEL**

**26.1 State Contract Manager.** The State Contract Manager identified below is the State's single point of contact and will perform all contract management pursuant to section 2-17-512, MCA, on behalf of the State. Written notices, requests, complaints or any other issues regarding the contract should be directed to the State Contract Manager.

The State Contract Manager for this contract is:

Robert Oliver, Contracts Officer  
Room 165 Mitchell Building  
125 North Roberts  
PO Box 200135  
Helena MT 59620-0135  
Telephone #: (406) 444-0110  
Fax #: (406) 444-2529  
E-mail: [roliver@mt.gov](mailto:roliver@mt.gov)

**26.2 State Project Manager.** Each using State agency or Cooperative Purchaser will identify a Project Manager in the project task order. The Project Manager will manage the day-to-day project activities on behalf of the State/Cooperative Purchaser.

## **27. CONTRACTOR PERSONNEL**

**27.1 Change of Staffing.** Since qualifications of personnel were key in determining which offerors were selected to be on this TC, a written notification of any changes in key personnel must be made to the

state agency, prior to entering into negotiations to perform any specific work scope. Contractor shall replace such employee(s) at its own expense with an employee of substantially equal abilities and qualifications without additional cost to the agency. If these staffing changes cause the contractor to no longer meet the qualifications stated herein, that firm will be removed from the service area of this TC. Failure to notify the state agency of staffing changes could result in the contractor being removed from the TC listing and possible suspension from bidding on other state projects.

**27.2 Contractor Contract Manager.** The Contractor Contract Manager identified below will be the single point of contact to the State Contract Manager and will assume responsibility for the coordination of all contract issues under this contract. The Contractor Contract Manager will meet with the State Contract Manager and/or others necessary to resolve any conflicts, disagreements, or other contract issues.

The Contractor Contract Manager for this contract is:

Name: Bob Anderson  
Address: 3020 Bozeman Ave  
City, State, ZIP: Helena, MT 59601  
Telephone #: (406) 443-4150 ext. 145  
Cell Phone #: (406) 431-6916  
Fax #: (406)-443-4155  
E-mail: randerson@hydrometrics.com

**27.3 Contractor Project Manager.** The Contractor Project Manager identified below will manage the day-to-day project activities on behalf of the Contractor:

The Contractor Project Manager for this contract is:

Name: Bob Anderson  
Address: 3020 Bozeman Ave.  
City, State, ZIP: Helena, MT 59601  
Telephone #: (406) 443-4150 ext. 145  
Cell Phone #: (406) 431-0236  
Fax #: (406) 443-4155  
E-mail: randerson@hydrometrics.com

## **28. MEETINGS**

The Contractor is required to meet with the State's personnel, or designated representatives, to resolve technical or contractual problems that may occur during the term of the contract or to discuss the progress made by Contractor and the State in the performance of their respective obligations, at no additional cost to the State. Meetings will occur as problems arise and will be coordinated by the State. The Contractor will be given a minimum of three full working days notice of meeting date, time, and location. Face-to-face meetings are desired. However, at the Contractor's option and expense, a conference call meeting may be substituted. Consistent failure to participate in problem resolution meetings two consecutive missed or rescheduled meetings, or to make a good faith effort to resolve problems, may result in termination of the contract.

## **29. CONTRACTOR PERFORMANCE ASSESSMENTS**

The State may do assessments of the Contractor's performance. This contract may be terminated for one or more poor performance assessments. Contractors will have the opportunity to respond to poor performance assessments. The State will make any final decision to terminate this contract based on the assessment and any related information, the Contractor's response and the severity of any negative performance assessment. The Contractor will be notified with a justification of contract termination. Performance assessments may be considered in future solicitations.

**30. TRANSITION ASSISTANCE**

If this contract is not renewed at the end of this term, or is terminated prior to the completion of a project, or if the work on a project is terminated, for any reason, the Contractor must provide for a reasonable period of time after the expiration or termination of this project or contract, all reasonable transition assistance requested by the State, to allow for the expired or terminated portion of the services to continue without interruption or adverse effect, and to facilitate the orderly transfer of such services to the State or its designees. Such transition assistance will be deemed by the parties to be governed by the terms and conditions of this contract, except for those terms or conditions that do not reasonably apply to such transition assistance. The State shall pay the Contractor for any resources utilized in performing such transition assistance at the most current rates provided by the contract. If there are no established contract rates, then the rate shall be mutually agreed upon. If the State terminates a project or this contract for cause, then the State will be entitled to offset the cost of paying the Contractor for the additional resources the Contractor utilized in providing transition assistance with any damages the State may have otherwise accrued as a result of said termination.

**31. CHOICE OF LAW AND VENUE**

This contract is governed by the laws of Montana. The parties agree that any litigation concerning this bid, proposal or subsequent contract must be brought in the First Judicial District in and for the County of Lewis and Clark, State of Montana and each party shall pay its own costs and attorney fees. (See Mont. Code Ann. § 18-1-401.)

**32. SCOPE, AMENDMENT AND INTERPRETATION**

**32.1 Contract.** This contract consists of 13 numbered pages, any Attachments as required, RFP # SPB05-894P, as amended and the Contractor's RFP response as amended. In the case of dispute or ambiguity about the minimum levels of performance by the Contractor the order of precedence of document interpretation is in the same order.

**32.2 Entire Agreement.** These documents contain the entire agreement of the parties. Any enlargement, alteration or modification requires a written amendment signed by both parties.

**33. EXECUTION**

The parties through their authorized agents have executed this contract on the dates set out below.

**DEPARTMENT OF ADMINISTRATION  
STATE PROCUREMENT BUREAU  
PO BOX 200135  
HELENA MT 59620-0135**

**HYDROMETRICS, INC.  
3020 BOZEMAN AVENUE  
HELENA MT 59601  
FEDERAL ID # 43-1955615**

BY: \_\_\_\_\_  
Robert Oliver, Contracts Officer

BY: \_\_\_\_\_  
(Name/Title)

BY: \_\_\_\_\_  
(Signature)

BY: \_\_\_\_\_  
(Signature)

DATE: \_\_\_\_\_

DATE: \_\_\_\_\_

## **ATTACHMENT A CONTRACTOR'S RESPONSE**

### **4.2.4 TMDL Targets**

#### **References:**

References applicable to this Service Category are listed in the reference matrix, Table 4-1. Key references for this category include:

- Tina Bernd-Cohen, Blackfoot Challenge (multiple projects);
- Dean Yashan, Montana Department of Environmental Quality (multiple projects);
- Heidi Lindgren, Montana Department of Environmental Quality;
- Ray Henderson, Salmon/Challis National Forest; and
- Chris Pfahl, Asarco, Inc.

#### **Company Profile and Experience:**

Hydrometrics, Inc. has been in business for more than 25 years (under this same name) conducting services similar to those requested under this Service Category. Resumes for key personnel who may be involved with this Service Category are included as Attachment 1 to this proposal. These key individuals include:

- Bob Anderson-Project Manager;
- Mark Walker-Technical Leader;
- Greg Bryce; and
- Mark Rhodes.

#### **Method of Providing Services and Qualifications:**

Hydrometrics has been involved in the development of water quality targets for a number of Montana TMDL projects in coordination with MDEQ, including the Blackfoot Headwaters metals TMDL, the Bobtail Creek sediment and habitat TMDL, the Prospect Creek Metals TMDL, the Middle Blackfoot TMDL and Nevada Creek TMDL. Hydrometrics has also developed water quality targets, or restoration targets for a number of other non-TMDL program restoration projects. Hydrometrics has developed water quality targets based on numeric water quality standards, such as targets for metals-related impairment, as well as water quality targets based on narrative standards and/or beneficial uses.

As a specific example, Hydrometrics completed target development in preparation of the Water Quality Restoration Plan for Metals in the Blackfoot Headwaters TMDL Planning Area. TMDL target development was part of an overall process of first identifying the existing level of impairment (on a seasonal basis), identifying indicators of the impairment conditions (elevated metals concentrations in the water column and in stream sediments, infilling of stream substrate from chemical precipitates, aquatic biota populations, aesthetic properties), then establishing the desired condition, or target, for each indicator. For elevated water column metals concentrations, the numeric water quality criteria included in Montana Water Quality Bureau Circular 7 served as targets after adjustment for water hardness, as necessary. For elevated metals concentrations in stream sediments, a combination of reference stream metals concentrations and benchmark toxicity levels included in the literature were used to establish targets. A target was also established for chemical precipitates (primarily iron hydroxides) based on the narrative surface water quality standard of no objectionable precipitates and for protection of the recreation and aquatic life support beneficial uses. Finally, a target was established for macroinvertebrate populations to ensure attainment of the aquatic life support beneficial use.

Hydrometrics approach to target development included a three step process:

1. Quantify impairment conditions in the water body through compilation and review of existing relevant data and field surveys, and comparison to numeric water quality criteria, narrative water quality standards, and status of beneficial use support;
2. Establish targets for those parameters contributing to water quality impairment; and
3. Compare current conditions to desired or target conditions.

This three step process took approximately one month to complete. The entire water quality restoration plan and TMDL for metals was completed for public review in approximately 8 months and was subsequently approved by EPA.

Attachment 2 of this proposal includes Hydrometrics' Data Quality Management Procedures and an example Quality Assurance Project Plan (QAPP). Hydrometrics' data quality management procedures include detailed standard operating procedures for all project aspects, including project management, reporting, and all field activities. The standard operating procedures are reviewed annually and modified as necessary to assure consistency with MDEQ and/or EPA protocol where applicable. Attainment of project data quality objectives is assured through strict adherence to applicable SOPs, and individual project QAPPs prepared in accordance with EPA protocol (see example QAPP in Attachment 2).

#### **Staff Qualifications:**

Staff qualifications are provided in Table 4-2, Staff Qualifications Matrix. As shown in Table 4-2, eight of the 11 project personnel have a Natural Science bachelors degree or higher. Key staff applicable to this Service Category include:

- **Bob Anderson-Project Manager**  
*BS-Geology, MS-Hydrogeology: 15 years experience in design, oversight and implementation of complex multi-media environmental monitoring programs specific to aquatic resource characterization; preparation of quality assurance plans; data analysis and interpretation; restoration planning and target development. Completed TMDL targets for multiple TMDL projects in Montana.*
- **Mark Walker-Technical Leader**  
*BS-Chemistry, MS-Environmental Chemistry: 13 years experience in design, oversight and implementation of environmental monitoring programs; preparation of quality assurance plans; data analysis and interpretation; and restoration planning. Completed TMDL targets for multiple TMDL projects in Montana.*
- **Greg Bryce – Staff Scientist**  
*BS-Chemistry: 4 years experience in preparation of quality assurance plans, implementation of multi-media environmental monitoring programs; environmental data analysis and interpretation.*
- **Mark Rhodes – Staff Scientist/Engineer**  
*BS-Geology, BS-Civil Engineering: 4 years experience in environmental monitoring and restoration design. Completed Rosgen Applied Fluvial Geomorphology course.*

#### **4.2.5 TMDL Source Assessment/Delineation**

#### **References:**

References applicable to this Service Category are listed in the reference matrix, Table 4-1. Key references for this category include:

- Tina Bernd-Cohen, Blackfoot Challenge (multiple projects);

- Dean Yashan, Montana Department of Environmental Quality (multiple projects);
- Heidi Lindgren, Montana Department of Environmental Quality;
- George Furniss, Montana Department of Environmental Quality; and
- Chris Pfahl, Asarco, Inc.

**Company Profile and Experience:**

Hydrometrics, Inc. has been in business for more than 25 years (under this same name) conducting services similar to those requested under this Service Category.

Resumes for key personnel who may be involved with this Service Category are included as Attachment 1 to this proposal. These key individuals include:

- Bob Anderson-Project Manager;
- Mark Walker-Technical Leader;
- Greg Bryce;
- Mark Rhodes; and
- Jamie Poell.

**Method of Providing Services and Qualifications:**

Hydrometrics has been involved in completion of source assessment/delineation for a number of Montana TMDL projects in coordination with MDEQ, including the Blackfoot Headwaters metals TMDL, the Bobtail Creek sediment and habitat TMDL, the Prospect Creek Metals TMDL, the Middle Blackfoot TMDL and Nevada Creek TMDL. Hydrometrics has also completed source assessment/delineation for a number of other non- TMDL program restoration projects such as the Upper Blackfoot Mining Complex in Lincoln County, MT, and the Black Pine Mine in Granite County, MT.

As a specific example, Hydrometrics completed a detailed source assessment/delineation in preparation of the Water Quality Restoration Plan for Metals in the Blackfoot Headwaters TMDL Planning Area. Source assessment for this project included both point sources and nonpoint sources. Hydrometrics implemented a systematic approach to source assessment/ delineation, as well as overall TMDL development, on this project. The approach followed the phases listed below:

- Quantify impairment conditions in the water body through compilation and review of existing relevant data and field surveys, and comparison to numeric water quality criteria, narrative water quality standards, and status of beneficial use support;
- Identify water quality indicators applicable to the identified impairments, and establish water quality targets for those indicator parameters; and
- Identify sources of impairment through water quality loading analyses, field reconnaissance, and review of biological data (macroinvertebrate, periphyton).

In the case of the Blackfoot Headwaters TMDL Planning Area, Hydrometrics was able to identify specific sources of impairment such as discrete mine waste piles, stream channel and riparian sources, and background loading sources. In areas where specific individual sources could not be identified, follow-up monitoring was proposed as a monitoring strategy (and subsequently completed by Hydrometrics) to fully delineate all sources of impairment.

The source assessment/delineation took approximately one month to complete. The entire water quality restoration plan and TMDL for metals was completed for public review in approximately 8 months and was subsequently approved by EPA.



Attachment 2 of this proposal includes Hydrometrics' Data Quality Management Procedures and an example Quality Assurance Project Plan (QAPP). Hydrometrics' data quality management procedures include detailed standard operating procedures for all aspects of a project, including project management, reporting, and all field sampling activities. The standard operating procedures are reviewed annually and modified as necessary to assure consistency with MDEQ and/or EPA protocol where applicable. Attainment of project data quality objectives is assured through strict adherence to applicable SOPs, and individual project QAPPs prepared in accordance with EPA protocol (see example QAPP in Attachment 2).

#### **Staff Qualifications:**

Staff qualifications are provided in Table 4-2, Staff Qualifications Matrix. As shown in Table 4-2, eight of the 11 project personnel have a Natural Science bachelors degree or higher. Key staff applicable to this Service Category include:

- **Bob Anderson-Project Manager**  
*BS-Geology, MS-Hydrogeology: 15 years experience in design, oversight and implementation of complex multi-media environmental monitoring programs specific to aquatic resource characterization; preparation of quality assurance plans; data analysis and interpretation; restoration planning and target development. Completed TMDL targets for multiple TMDL projects in Montana.*
- **Mark Walker-Technical Leader**  
*BS-Chemistry, MS-Environmental Chemistry: 13 years experience in design, oversight and implementation of environmental monitoring programs; preparation of quality assurance plans; data analysis and interpretation; and restoration planning. Completed TMDL targets for multiple TMDL projects in Montana.*
- **Jamie Poell – Reclamation Specialist**  
*BS-Forest Management and Geography, MS-Land Rehabilitation: 18 years experience in land and riparian area restoration, soil stabilization through revegetation.*
- **Greg Bryce – Staff Scientist**  
*BS-Chemistry: 4 years experience in preparation of quality assurance plans, implementation of multi-media environmental monitoring programs; environmental data analysis and interpretation.*
- **Mark Rhodes – Staff Scientist/Engineer**  
*BS-Geology, BS-Civil Engineering: 4 years experience in environmental monitoring and restoration design. Completed Rosgen Applied Fluvial Geomorphology course.*

#### **4.2.6 TMDL Load Allocations**

#### **References:**

References applicable to this Service Category are listed in the reference matrix, Table 4-1. Key references for this category include:

- Tina Bernd-Cohen, Blackfoot Challenge (multiple projects);
- Dean Yashan, Montana Department of Environmental Quality (multiple projects);
- Heidi Lindgren, Montana Department of Environmental Quality;
- Chris Pfahl, Asarco, Inc.; and
- Bruce Gilbert, Stillwater Mining.

#### **Company Profile and Experience:**

Hydrometrics, Inc. has been in business for more than 25 years (under this same name) conducting services similar to those requested under this Service Category.

Resumes for key personnel who may be involved with this Service Category are included as Attachment 1 to this proposal. These key individuals include:

- Bob Anderson-Project Manager;
- Mark Walker-Technical Leader; and
- Greg Bryce-Project Scientist.

### **Method of Providing Services and Qualifications:**

Hydrometrics has completed load allocations on a number of TMDL and non-TMDL projects. Montana TMDL project experience includes the Blackfoot Headwaters TMDL Planning Area metals TMDL, the Bobtail Creek TMDL and restoration plan, the Prospect Creek Metals TMDL, the Middle Blackfoot TMDL Planning Area, and the Nevada Creek TMDL Planning Area. Hydrometrics has also developed load allocations for numerous other non-TMDL restoration projects, such as the Upper Blackfoot Mining Complex in Lincoln County, MT, and the Black Pine Mine in Granite County, MT, with the overall goal of attaining compliance with water quality standards and supporting all beneficial uses.

As a specific example, Hydrometrics developed load allocations and waste load allocations for all sources of water quality impairment in preparation of the Water Quality Restoration Plan for Metals in the Blackfoot Headwaters TMDL Planning Area. Load allocations were developed for each individual 303(d)-listed water body, and included a combination of quantitative load allocations for discrete sources, categorical allocations for general source types, and performance-based load allocations recognizing ongoing restoration programs and activities expected to address certain identified impairment sources. The overall load allocation process for the Blackfoot Headwaters TMDL Planning Area was based on the assimilative capacity of the specific water bodies under various hydrologic and seasonal conditions and accounted for potential background loading. The load allocation approach proceeded according to the following steps:

1. Following water quality target development and source assessment/delineation, source/target linkages were developed. The target/source linkages helped determine the cause and effect relationship between a specific source (either individual or categorical) and the impairment condition, including parameter fate and transport. Using the linkages, the assimilative capacity of each water body for the impairment causing parameters was determined.
2. Using the target/source linkages and assimilative capacities developed under Step 1, the allowable load (equal to the assimilative capacity for each parameter) was distributed among the various sources and source categories, after accounting for an intrinsic margin of safety. Examples include 0.38 pounds/day copper for individual identified loading source under high flow conditions, and 0.016 pounds/day under low flow conditions.
3. Based on the load allocations, restoration and monitoring plans were developed for each impaired water body in the planning area.

Once the source assessment/delineation and target development were complete, the target/ source linkages and load allocations were developed very rapidly, in about two weeks). The entire water quality restoration plan and TMDL for metals was completed for public review in approximately 8 months and was subsequently approved by EPA.

Attachment 2 of this proposal includes Hydrometrics' Data Quality Management Procedures and an example Quality Assurance Project Plan (QAPP). Hydrometrics' data quality management procedures include detailed standard operating procedures for all aspects of a project, including project

management, reporting, and all field sampling activities. The standard operating procedures are reviewed annually and modified as necessary to assure consistency with MDEQ and/or EPA protocol where applicable. Attainment of project data quality objectives is assured through strict adherence to applicable SOPs, and individual project QAPPs prepared in accordance with EPA protocol (see example QAPP in Attachment 2).

#### **Staff Qualifications:**

Staff qualifications are provided in Table 4-2, Staff Qualifications Matrix. As shown in Table 4-2, eight of the 11 project personnel have a Natural Science bachelors degree or higher. Key staff applicable to this Service Category include:

- **Bob Anderson-Project Manager**  
*BS-Geology, MS-Hydrogeology: 15 years experience in design, oversight and implementation of complex multi-media environmental monitoring programs specific to aquatic resource characterization; preparation of quality assurance plans; data analysis and interpretation; restoration planning and target development. Completed TMDL targets for multiple TMDL projects in Montana.*
- **Mark Walker-Technical Leader**  
*BS-Chemistry, MS-Environmental Chemistry: 13 years experience in design, oversight and implementation of environmental monitoring programs; preparation of quality assurance plans; data analysis and interpretation; and restoration planning. Completed TMDL targets for multiple TMDL projects in Montana.*
- **Greg Bryce – Staff Scientist**  
*BS-Chemistry: 4 years experience in preparation of quality assurance plans, implementation of multi-media environmental monitoring programs; environmental data analysis and interpretation.*

#### **4.2.7 Total Maximum Daily Loads**

##### **References:**

References applicable to this Service Category are listed in the reference matrix, Table 4-1. Key references for this category include:

- Tina Bernd-Cohen, Blackfoot Challenge (multiple projects);
- Dean Yashan, Montana Department of Environmental Quality (multiple projects);
- Heidi Lindgren, Montana Department of Environmental Quality;
- Bruce Gilbert, Stillwater Mining; and
- Chris Pfahl, Asarco, Inc.

##### **Company Profile and Experience:**

Hydrometrics, Inc. has been in business for more than 25 years (under this same name) conducting services similar to those requested under this Service Category.

Resumes for key personnel who may be involved with this Service Category are included as Attachment 1 to this proposal. These key individuals include:

- Bob Anderson-Project Manager;
- Mark Walker-Technical Leader; and
- Greg Bryce.-Staff Scientist.

**Method of Providing Services and Qualifications:**

Hydrometrics has developed TMDLs in conjunction with MDEQ on a number of projects. Examples include the Blackfoot Headwaters TMDL Planning Area metals TMDL, the Bobtail Creek TMDL and restoration plan, the Prospect Creek Metals TMDL, the Middle Blackfoot TMDL Planning Area, and the Nevada Creek TMDL Planning Area. Different approaches to TMDL development have been used on these projects including quantitative TMDLs (the maximum load (e.g. lbs/day) a water body can assimilate and still meet water quality standards and beneficial uses under various seasonal and hydrologic conditions), maximum allowable levels of a parameter based on toxicity and/or beneficial use support considerations, and percent reductions required in the loading rate of a specific parameter to meet a water quality target. Ultimately, a TMDL should define, either quantitatively or qualitatively, the sum of the load allocations and waste load allocations (the assimilative capacity) of a water body for a specific impairment-related parameter.

As a specific example, Hydrometrics developed TMDLs for five individual water bodies for preparation of the Water Quality Restoration Plan for Metals in the Blackfoot Headwaters TMDL Planning Area. The TMDLs were defined as a loading model which calculated the maximum allowable load in the water body for any given stream flow rate and water hardness. Example quantitative TMDLs were presented for each water body based on documented seasonal high flow and low flow and water hardness conditions. Adopting this modeled approach to TMDL development allowed the TMDL to be directly applicable to the full range of hydrologic and water chemistry conditions which may be encountered, while allowing for calculation of quantitative TMDLs based on specific flow and chemistry conditions for any given time. The TMDLs thus developed were used to define existing seasonal impairment conditions and to develop load and waste load allocations.

Development of metals TMDLs for the Blackfoot Headwaters TMDL Planning Area included the following steps:

1. Compile and review all available and relevant water quality and stream flow data from the affected water bodies;
2. Develop water quality targets based on numeric water quality criteria, narrative water quality standards, and/or beneficial use attainment;
3. Determine the seasonal loading capacities (TMDLs) of the affected bodies based on seasonal flow rates and water quality targets; and
4. Develop load allocations based on the seasonal TMDLs.

Once the data compilation was completed (about one month), TMDL development required only a matter of days. The entire water quality restoration plan and TMDL for metals was completed for public review in approximately 8 months and was subsequently approved by EPA.

Attachment 2 of this proposal includes Hydrometrics' Data Quality Management Procedures and an example Quality Assurance Project Plan (QAPP). Hydrometrics' data quality management procedures include detailed standard operating procedures for all aspects of a project, including project management, reporting, and all field sampling activities. The standard operating procedures are reviewed annually and modified as necessary to assure consistency with MDEQ and/or EPA protocol where applicable. Attainment of project data quality objectives is assured through strict adherence to applicable SOPs, and individual project QAPPs prepared in accordance with EPA protocol (see example QAPP in Attachment 2).

## **Staff Qualifications:**

Staff qualifications are provided in Table 4-2, Staff Qualifications Matrix. As shown in Table 4-2, eight of the 11 project personnel have a Natural Science bachelors degree or higher. Key staff applicable to this Service Category include:

- **Bob Anderson-Project Manager**  
*BS-Geology, MS-Hydrogeology: 15 years experience in design, oversight and implementation of complex multi-media environmental monitoring programs specific to aquatic resource characterization; preparation of quality assurance plans; data analysis and interpretation; restoration planning and target development. Developed TMDL for multiple TMDL projects in Montana.*
- **Mark Walker-Technical Leader**  
*BS-Chemistry, MS-Environmental Chemistry: 13 years experience in design, oversight and implementation of environmental monitoring programs; preparation of quality assurance plans; data analysis and interpretation; and restoration planning. Developed TMDLs for multiple TMDL projects in Montana.*
- **Greg Bryce – Staff Scientist**  
*BS-Chemistry: 4 years experience in preparation of quality assurance plans, implementation of multi-media environmental monitoring programs; environmental data analysis and interpretation..*

## **4.2.8 Stakeholder Participation**

### **References:**

References applicable to this Service Category are listed in the reference matrix, Table 4-1. Key references for this category include:

- Tina Bernd-Cohen, Blackfoot Challenge (multiple projects);
- Dean Yashan, Montana Department of Environmental Quality (multiple projects);
- Heidi Lindgren, Montana Department of Environmental Quality;
- Ray Henderson, Salmon/Challis National Forest; and
- Chris Pfahl, Asarco, Inc.

### **Company Profile and Experience:**

Hydrometrics, Inc. has been in business for more than 25 years (under this same name) conducting services similar to those requested under this Service Category. Resumes for key personnel who may be involved with this Service Category are included as Attachment 1 to this proposal. These key individuals include:

- Bob Anderson-Project Manager; and
- Mark Walker-Technical Leader.

### **Method of Providing Services and Qualifications:**

Hydrometrics personnel have extensive experience in promoting and fostering stakeholder involvement in wide variety of projects, including a number TMDL projects performed for MDEQ and/or local watershed groups, to overseeing public scoping, meetings and participation for Environmental Impact Statements conducted under the National Environmental Policy Act (NEPA). Specific experience includes preparation, planning and coordination of public meetings, review and response to public comments, preparing and distributing informational packets via mailings to stakeholders and the public, and generation of presentation materials for public meetings and internet-based dissemination.

As an example, Bob Anderson (Hydrometrics proposed project manager for TMDL-related services under this proposal) currently serves as Technical Director for the Blackfoot Challenge Habitat and Water Quality Restoration Committee. Under this role, Bob assists the Challenge in assuring stakeholder involvement throughout the TMDL development and implementation process. This includes regular updates to the stakeholders on TMDL and restoration project progress, preparation of briefings and mailings on key project developments, planning and participation in public meetings, providing technical presentations to stakeholders and other interested parties (e.g., presentation on Blackfoot Headwaters TMDL Planning Area plan to committee members and to Big Blackfoot Chapter of Trout Unlimited), and coordination of stakeholder participation in TMDL development (e.g., coordinate with U.S. Forest Service, DNRC, NRCS, Plum Creek Timber Company on road sediment delivery analyses and culvert assessments for Middle Blackfoot TMDL).

#### **Staff Qualifications:**

Staff qualifications are provided in Table 4-2, Staff Qualifications Matrix. As shown in Table 4-2, eight of the 11 project personnel have a Natural Science bachelors degree or higher. Key staff applicable to this Service Category include:

- **Bob Anderson-Project Manager**  
*BS-Geology, MS-Hydrogeology: 15 years experience in design, oversight and implementation of complex multi-media environmental monitoring programs specific to aquatic resource characterization; preparation of quality assurance plans; data analysis and interpretation.*
- **Mark Walker-Technical Leader**  
*BS-Chemistry, MS-Environmental Chemistry: 13 years experience in design, oversight and implementation of environmental monitoring programs; preparation of quality assurance plans; data analysis and interpretation.*

#### **4.2.9 TMDL Effectiveness Monitoring**

##### **References:**

References applicable to this Service Category are listed in the reference matrix, Table 4-1. Key references for this category include:

- Tina Bernd-Cohen, Blackfoot Challenge (multiple projects);
- Dean Yashan, Montana Department of Environmental Quality (multiple projects);
- Heidi Lindgren, Montana Department of Environmental Quality;
- Ray Henderson, Salmon/Challis National Forest; and
- Chris Pfahl, Asarco, Inc.

##### **Company Profile and Experience:**

Hydrometrics, Inc. has been in business for more than 25 years (under this same name) conducting services similar to those requested under this Service Category.

Resumes for key personnel who may be involved with this Service Category are included as Attachment 1 to this proposal. These key individuals include:

- Bob Anderson-Project Manager;
- Mark Walker-Technical Leader;
- Greg Bryce;

- Mark Rhodes; and
- Walter Crane.

### **Method of Providing Services and Qualifications:**

Hydrometrics has completed numerous water quality monitoring projects in Montana for TMDL and non-TMDL projects. These monitoring projects have included collection of water column chemistry data for metals, nutrients, organics, and suspended sediment; collection of stream substrate samples for metal chemistry analyses and “clean” sediment characterization; macroinvertebrate and periphyton sampling; stream flow monitoring, as well as other project-specific data needs. In addition to our extensive water quality monitoring experience, Hydrometrics owns and maintains an extensive array of water resource sampling equipment and materials, including field meters (pH, specific conductance, dissolved oxygen, turbidity, redox potential, depth integrated sediment samplers); a full array of stream flow measuring devices such as Marsh McBirney current velocity meters, portable flumes and weirs; a field portable spectrophotometer for field determination of most water quality parameters; and a truck-mounted portable field laboratory. Hydrometrics has also conducted geomorphic stream assessments including measurement of bankfull width, width to depth ratio, channel entrenchment, channel sinuosity, stream substrate composition, and pool frequency and quality. These analyses are typically performed by field staff trained in Rosgen or other appropriate field methods.

Specifically, Hydrometrics has completed several sampling events for the Blackfoot Challenge, MDEQ, and NRCS in the Blackfoot River and Nevada Creek watersheds between 2002 and the present. Objectives of these sampling programs include:

- Follow-up monitoring for the Blackfoot Headwaters metals TMDL to better define impairment conditions and impairment sources; and
- Preliminary water quality and stream sediment sampling in Nevada Creek drainage for MDEQ reassessment efforts and TMDL planning.

The monitoring programs included collection of depth-integrated water column samples for analyses of total recoverable metals concentrations (and dissolved aluminum), nutrient analyses; stream flow measurement, and field measurement of pH, DO, water temperature, and conductivity. Sediment sampling included collection of stream substrate samples for analysis of total metals concentrations. Sediment samples were field sieved through 63 micron nylon mesh with the larger, less bioavailable size fraction excluded from the samples. Biological sampling included collection of macroinvertebrate and periphyton samples for use by MDEQ. Hydrometrics was responsible for development of the sampling strategy (sampling locations, parameters, frequency), development and implementation of a quality assurance plan, completion of all sampling activities, and data validation, interpretation, and reporting. All data were provided to MDEQ in electronic format (Excel or MS Access) using DEQ-provided data formats and forms, to simply data transfer to the modernized STORET database. More recent data have also been entered into an internet-based Blackfoot Watershed project database established by Hydrometrics in conjunction with the Natural Resource Information System (NRIS) program.

### **Staff Qualifications:**

Staff qualifications are provided in Table 4-2, Staff Qualifications Matrix. As shown in Table 4-2, eight of the 11 project personnel have a Natural Science bachelors degree or higher. Key staff applicable to this Service Category include:

- [Bob Anderson-Project Manager](#)  
*BS-Geology, MS-Hydrogeology: 15 years experience in design, oversight and implementation of*



*complex multi-media environmental monitoring programs specific to aquatic resource characterization; preparation of quality assurance plans; data analysis and interpretation.*

- **Mark Walker-Technical Leader**  
*BS-Chemistry, MS-Environmental Chemistry: 13 years experience in design, oversight and implementation of environmental monitoring programs; preparation of quality assurance plans; data analysis and interpretation.*
- **Greg Bryce - Project Scientist**  
*BS-Chemistry: 4 years experience in preparation of quality assurance plans, implementation of multi-media environmental monitoring programs; environmental data analysis and interpretation.*
- **Mark Rhodes –Project Scientist/Engineer**  
*BS-Geology, BS-Civil Engineering: 4 years experience in environmental monitoring and restoration design. Completed Rosgen Applied Fluvial Geomorphology training.*
- **Walter Crane – Field Technician**  
*27 years experience conducting multi-media environmental monitoring programs, often in remote, mountainous portions of Montana.*

#### **4.2.10 Geographic Information Systems (GIS) Services**

##### **References:**

References applicable to this Service Category are listed in the reference matrix, Table 4-1. Key references for this category include:

- Tina Bernd-Cohen, Blackfoot Challenge (multiple projects);
- Dean Yashan, Montana Department of Environmental Quality (multiple projects);
- Glenn Green, North Powell County Conservation District;
- David Patrick, Heartland Ecosystem Management; and
- Jay Raser, Circle H Ranch, Missoula, Montana.

##### **Company Profile and Experience:**

Hydrometrics, Inc. has been in business for more than 25 years (under this same name) conducting services similar to those requested under this Service Category.

Resumes for key personnel who may be involved with this Service Category are included as Attachment 1 to this proposal. These key individuals include:

- Bob Anderson - Project Manager;
- Mark Walker - Technical Leader; and
- John Dayton – Computer Science.

##### **Method of Providing Services and Qualifications:**

Hydrometrics has utilized GIS mapping techniques for a wide spectrum of projects within Montana, including a number of Montana TMDL projects in coordination with MDEQ. GIS maps have been compiled for the Blackfoot Headwaters metals TMDL, the Prospect Creek Metals TMDL, the Middle Blackfoot TMDL, and the Nevada Creek TMDL. Other recent projects where Hydrometrics has used GIS mapping to present and interpret data include the Nevada Spring Creek wetlands design project in Powell County, the



Circle H Ranch Source Water Delineation and Assessment project in Missoula County, and the Town of Lincoln Sewer District project in Lewis and Clark County, Montana. Hydrometrics uses ArcView 3.2, ArcGIS 8.1, and Autodesk software for GIS mapping.

As a specific example, Hydrometrics prepared detailed GIS maps as part of the Blackfoot Headwaters Planning Area Metals TMDL and Water Quality Restoration Plan. Maps included layers showing stream reaches within the watershed from the National Hydrography Dataset, current and historical water quality monitoring sites, impaired stream reaches, and potential impairment sources. Other map layers used for project planning and reporting included land use and ownership, as well as aerial photo and topographic base layers. GIS map development included both use of existing data sources (primarily the Montana Natural Resources Information (NRIS) datasets) and integration of data captured in the field using GPS mapping equipment.

Mapping tasks were conducted throughout the preparation of the Blackfoot Headwaters metals TMDL and Water Quality Restoration Plan. The water quality restoration plan and TMDL for metals was completed for public review in approximately 8 months.

#### **Staff Qualifications:**

Staff qualifications are provided in Table 4-2, Staff Qualifications Matrix. As shown in Table 4-2, eight of the 11 project personnel have a Natural Science bachelors degree or higher. Key staff applicable to this Service Category include:

- **Bob Anderson-Project Manager**  
*BS-Geology, MS-Hydrogeology: 15 years experience in design, oversight and implementation of complex multi-media environmental monitoring programs specific to aquatic resource characterization; preparation of quality assurance plans; data analysis and interpretation, restoration planning and design. Three years experience in use and application of GIS in environmental planning.*
- **Mark Walker-Technical Leader**  
*BS-Chemistry, MS-Environmental Chemistry: 13 years experience in design, oversight and implementation of environmental monitoring programs; preparation of quality assurance plans; data analysis and interpretation , restoration planning and design. Five years experience in use and application of GIS in environmental planning.*
- **John Dayton-Computer Scientist**  
*Associates Degree-Automated Technology: 13 years experience in computer application and computer aided design. Even years experience in use and application of GIS in environmental planning.*

#### **4.2.11 Remote Sensing**

##### **References:**

References applicable to this Service Category are listed in the reference matrix, Table 4-1. Key references for this category include:

- Tina Bernd-Cohen, Blackfoot Challenge (multiple projects);
- Jim Hughes, ExxonMobil Corp, Billings;
- Dean Yashan, Montana Department of Environmental Quality;
- Cora Helm, Montana Department of Transportation; and

- David Patrick, Heartland Ecosystem Services.

### **Company Profile and Experience:**

Hydrometrics, Inc. has been in business for more than 25 years (under this same name) conducting services similar to those requested under this Service Category.

Resumes for key personnel who may be involved with this Service Category are included as Attachment 1 to this proposal. These key individuals include:

- Bob Anderson-Project Manager;
- Mark Walker-Technical Leader; and
- Greg Bryce –Project Scientist.

### **Method of Providing Services and Qualifications:**

Hydrometrics has utilized aerial photography assessment on a number of projects for stream and landtype/land use characterization. Examples include the Potts Ranch Project where historic aerial photography was used to determine historic stream channel locations and stream migration rates, the Upper Blackfoot Mining Complex where aerial photography was used to determine historic stream channel locations and characteristics (entrenchment ratio, gradient, sediment transport capacity, riparian conditions) to help identify areas of historic mine tailings deposition, and the Blackfoot Headwaters metals TMDL where aerial photography was used for source assessment/delineation.

As a specific example, Hydrometrics evaluated historic Yellowstone River channel conditions, including channel location and geomorphic properties, for evaluating MPDES permitting options and requirements at the ExxonMobil refinery in Billings, MT. In particular, the assessment utilized time sequenced aerial photos to track river migration, stream bank condition and stability, and point bar formation over time. The channel and point bar stability was of interest since these features will control the river mixing, or assimilative capacity with respect to a permitted discharge from the refinery facility. Geomorphic information obtained from the analysis was compiled and entered into a spreadsheet database to facilitate identification of temporal trends.

### **Staff Qualifications:**

Staff qualifications are provided in Table 4-2, Staff Qualifications Matrix. As shown in Table 4-2, nine of 11 key project personnel have a Natural Science bachelors degree or higher. Key staff applicable to this Service Category include:

- **Bob Anderson-Project Manager**  
*BS-Geology, MS-Hydrogeology: 15 years xperience in design, oversight and implementation of complex multi-media environmental monitoring programs specific to aquatic resource characterization; preparation of quality assurance plans; data analysis and interpretation. Performed numerous aerial watershed assessments for evaluation of land use and landtype, and geomorphic characteristics.*
- **Mark Walker-Technical Leader**  
*BS-Chemistry, MS-Environmental Chemistry 13 years experience in design, oversight and implementation of environmental monitoring and assessment programs; preparation of quality assurance plans; data analysis and interpretation. Performed numerous aerial watershed assessments for evaluation of land use and landtype, and geomorphic characteristics.*
- **Greg Bryce – Project Scientist**  
*BA-Chemistry: 4 years experience in environmental evaluations and assessments, computer*

*applications.*

#### **4.2.12 Water Quality Modeling**

##### **References:**

References applicable to this Service Category are listed in the reference matrix, Table 4-1. Key references for this category include:

- Jim Hughes, ExxonMobil Billings Refinery;
- Bruce Gilbert, Stillwater Mining Company;
- Terry McLaughlin, Stone Container;
- Mike Bergstrom, Fidelity Exploration & Production Company; and
- John Parks, Barretts Minerals.

##### **Company Profile and Experience:**

Hydrometrics, Inc. has been in business for more than 25 years (under this same name) conducting services similar to those requested under this Service Category.

Resumes for key personnel who may be involved with this Service Category are included as Attachment 1 to this proposal. These key individuals include:

- Bob Anderson-Project Manager;
- Mark Walker-Technical Leader; and
- Bill Thompson – Project Scientist.

##### **Method of Providing Services and Qualifications:**

Hydrometrics has conducted water quality modeling for a variety of clients. Relevant projects have included MPDES-permit related modeling and mixing zone analyses for Stillwater Mining Company, Stone Container, ExxonMobil, Fidelity Exploration and Production Company, and Barretts Minerals. Hydrometrics has experience with a wide range of water quality modeling tools and techniques, including groundwater flow and transport models, geochemical models, watershed-scale hydrologic models, hydrodynamic mixing models. In addition, Hydrometrics has developed numerous spreadsheet-based dilution and mixing models on a project-specific basis for both groundwater and surface water systems.

As a specific example, Hydrometrics worked with the ExxonMobil refinery in Billings, Montana to evaluate potential mixing and dilution of a permitted effluent discharge to the Yellowstone River. Work was conducted as part of the MPDES permit renewal process for this discharge. The project involved two primary tasks, including:

- Field data collection under different receiving water flow conditions; and
- Modeling concentration distributions and dilution effects under different discharge scenarios (varying effluent pipe configurations and relative effluent and receiving water flow volumes).

Surface water quality modeling was conducted assuming conservative behavior of constituents of concern over the scale of the mixing zone, using CORMIX. The final report for the project was submitted to MDEQ in 2003, and included recommendations for locating the effluent discharge point to maximize initial mixing, minimizing the areal extent of the mixing zone. The entire project, from initial scoping and field reconnaissance through final report submittal, was completed in approximately 6 months.

## Staff Qualifications:

Staff qualifications are provided in Table 4-2, Staff Qualifications Matrix. As shown in Table 4-2, eight of the ten project personnel have a Natural Science bachelors degree or higher. Key staff applicable to this Service Category include:

- **Bob Anderson-Project Manager**  
*BS-Geology, MS-Hydrogeology: 15 years experience in design, oversight and implementation of complex multi-media environmental monitoring programs specific to aquatic resource characterization; preparation of quality assurance plans; data analysis and interpretation.*
- **Mark Walker-Technical Leader**  
*BS-Chemistry, MS-Environmental Chemistry: 13 years experience in design, oversight and implementation of environmental monitoring programs; preparation of quality assurance plans; data analysis and interpretation; restoration planning; and water quality modeling.*
- **Bill Thompson – Project Scientist**  
*BS-Geology, MS Hydrogeology: 16 years experience in design and implementation of environmental monitoring programs, data analysis and interpretation, water quality modeling.*

## 4.2.13 Statistical Analysis

### References:

References applicable to this Service Category are listed in the reference matrix, Table 4-1. Key references for this category include:

- Tina Bernd-Cohen, Blackfoot Challenge (multiple projects);
- Dean Yashan, Montana Department of Environmental Quality (multiple projects);
- Rob Hartman, FMC;
- Barry Damschen, Barry Damschen Consulting; and
- Chris Pfahl, ASARCO Incorporated.

### Company Profile and Experience:

Hydrometrics, Inc. has been in business for more than 25 years (under this same name) conducting services similar to those requested under this Service Category.

Resumes for key personnel who may be involved with this Service Category are included as Attachment 1 to this proposal. These key individuals include:

- Bob Anderson-Project Manager;
- Mark Walker-Technical Leader; and
- Greg Bryce.

### Method of Providing Services and Qualifications:

Hydrometrics has extensive experience using statistical methods for summarizing, interpreting, and analyzing large environmental datasets. We have a working knowledge of both parametric and nonparametric statistical methods for description and comparison, seasonal and long-term water quality trend analysis, hypothesis testing, and a variety of graphical presentation methods for effectively communicating the essential characteristics of analytical data. Recent Hydrometrics projects involving statistical data analysis have included the Blackfoot Headwaters metals TMDL, the Nevada Creek TMDL, and preparation of water quality data evaluation reports for the Upper Blackfoot Mining Complex (UBMC)

and the Black Pine Mine near Philipsburg, Montana. In addition, Hydrometrics has a number of ongoing projects to analyze routinely collected monitoring data, using MDEQ and/or EPA-approved statistical techniques for detecting trends and testing for significant differences. These projects include groundwater statistical reports for the FMC plant in Pocatello, Idaho, the Adams County Landfill in Washington, and the Beaverhead, Sanitation, Inc., and City of Helena Landfills in Montana.

The FMC project provides the most representative example of Hydrometrics' proficiency with data compilation and analysis using a variety of statistical techniques. Quarterly groundwater monitoring data from an extensive network of RCRA monitoring wells at the FMC site are reviewed by Hydrometrics. Data review and validation is followed by preparation of an annual statistical report. The report includes summary statistics, trend graphs, and a tiered statistical evaluation of groundwater data from individual waste management units at the site. The statistical evaluation, developed in coordination with state and federal agencies with oversight responsibility, includes use of a non-parametric test (Mann-Whitney U-test), as well as comparison of summary statistics to test for significant differences in upgradient and downgradient groundwater quality.

Hydrometrics conducts the monitoring and data review activities on a quarterly basis, with annual preparation of the statistical report occurring during the first 2-3 months of each calendar year. The project was initiated in the early 1990s and has been ongoing since that time.

#### **Staff Qualifications:**

Staff qualifications are provided in Table 4-2, Staff Qualifications Matrix. As shown in Table 4-2, eight of the 11 project personnel have a Natural Science bachelors degree or higher. Key staff applicable to this Service Category include:

- **Bob Anderson-Project Manager**  
*BS-Geology, MS-Hydrogeology: 15 years experience in design, oversight and implementation of complex multi-media environmental monitoring programs specific to aquatic resource characterization; preparation of quality assurance plans; data analysis and interpretation.*
- **Mark Walker-Technical Leader**  
*BS-Chemistry, MS-Environmental Chemistry: 13 years experience in design, oversight and implementation of environmental monitoring programs; preparation of quality assurance plans; data analysis and interpretation.*
- **Greg Bryce – Staff Scientist**  
*BS-Chemistry: 4 years experience in preparation of quality assurance plans, implementation of multi-media environmental monitoring programs; environmental data analysis and interpretation.*

#### **4.2.14 Analytical Laboratory Services**

Hydrometrics is not proposing on this Service Category.

#### **4.2.15 DEQ Electronic Data/Information Technical Assistance**

Hydrometrics is not proposing on this Service Category.

#### **4.2.16 Heavy Equipment Operators**

Hydrometrics is not proposing on this Service Category.

#### **4.2.17 Revegetation Services**

Hydrometrics is not proposing on this Service Category.

#### **4.2.18 Watershed Coordination**

Hydrometrics is not proposing on this Service Category.

#### **4.2.19 Communication/Education Services**

Hydrometrics is not proposing on this Service Category.

#### **4.2.20 Communication/Education Services – Contract Administration**

Hydrometrics is not proposing on this Service Category.

#### **4.2.21 Communication/Education Services – Information Transfer & TMDL Technical Editing**

Hydrometrics is not proposing on this Service Category.

#### **4.2.22 Land Use Planning Services**

Hydrometrics is not proposing on this Service Category.

#### **4.2.23 Preparation of Technical Manuals or Circulars**

Hydrometrics is not proposing on this Service Category